

(No Model.)

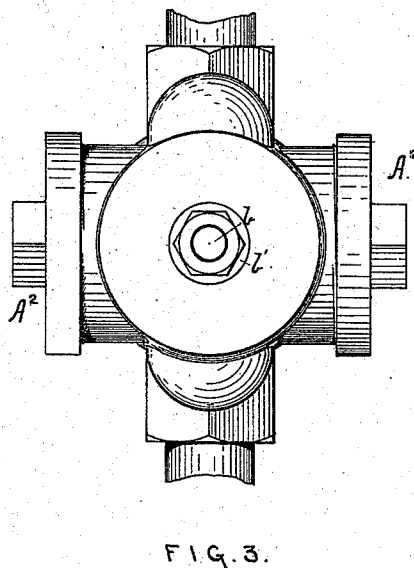
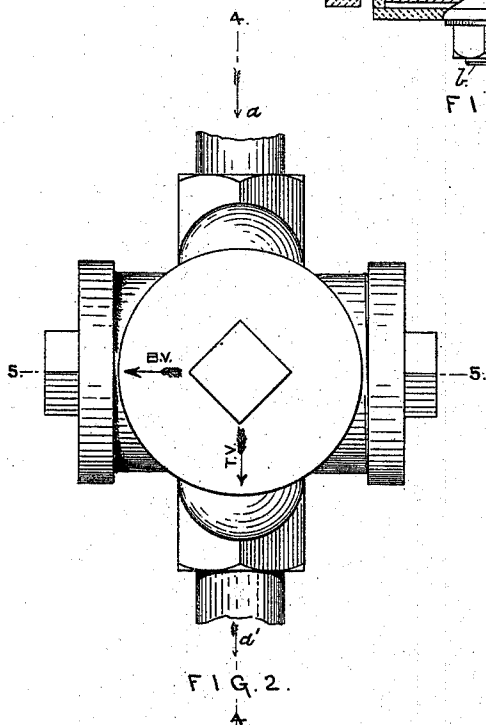
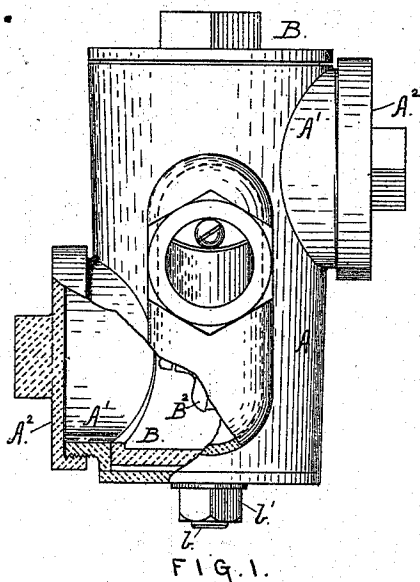
3 Sheets—Sheet 1.

J. H. CROSBY.

PLUG CHECK FOR MARINE OR OTHER BOILERS.

No. 530,473.

Patented Dec. 4, 1894.



WITNESSES:

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(No Model.)

3 Sheets—Sheet 2.

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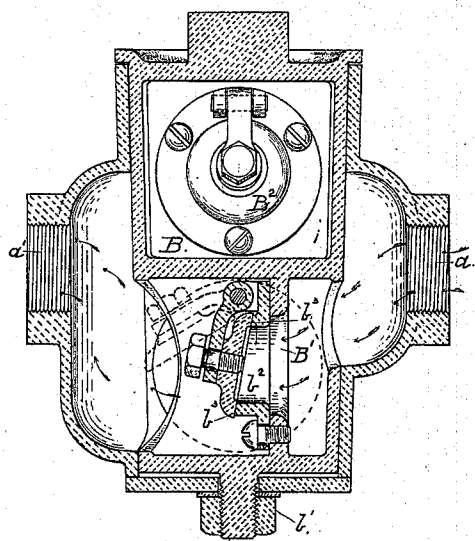


FIG. 4.

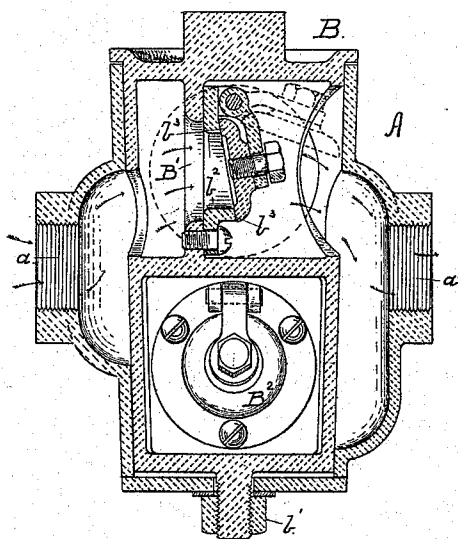


FIG. 4a.

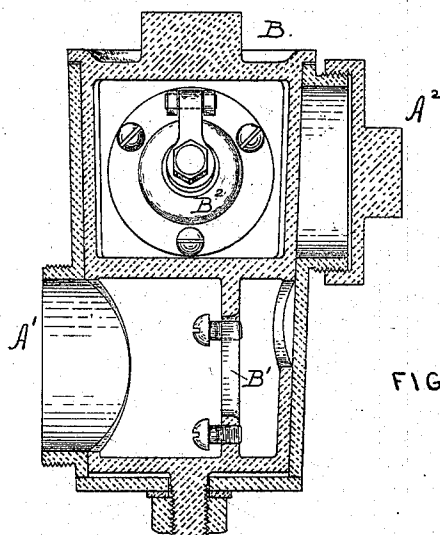


FIG. 5.

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(No Model.)

3 Sheets—Sheet 3.

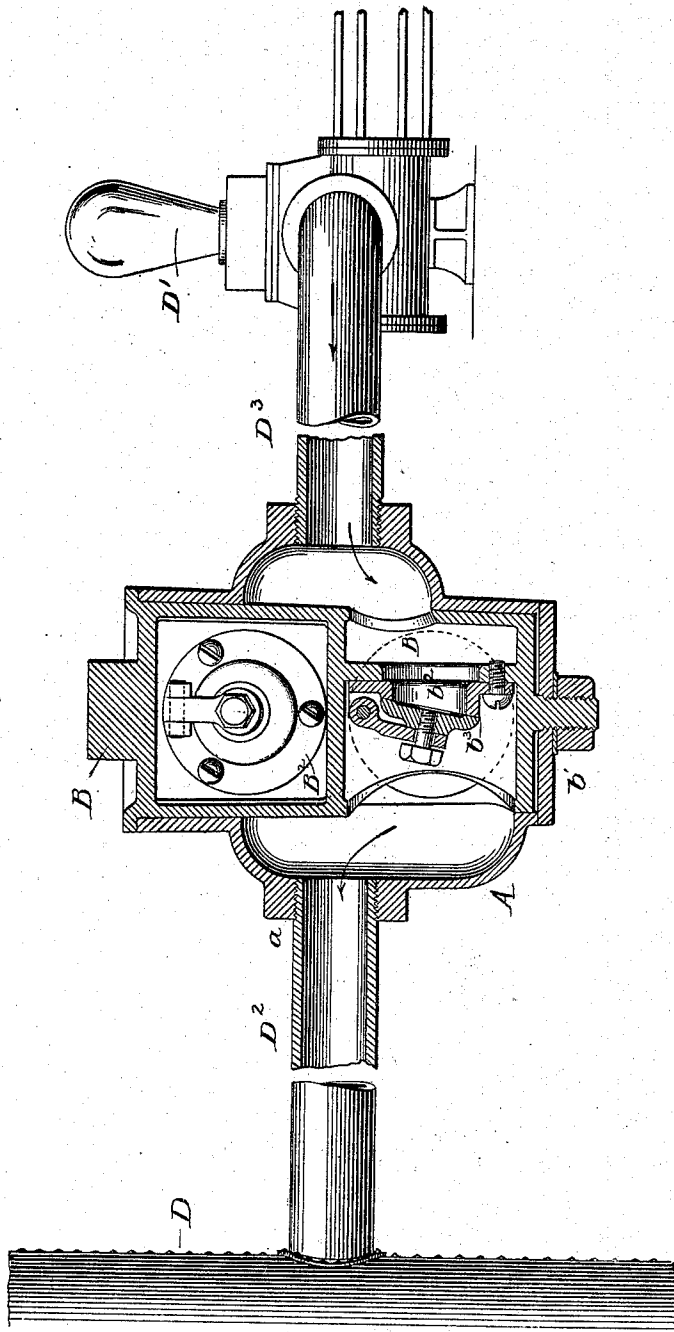
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Fig. 6.



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# UNITED STATES PATENT OFFICE.

JAMES HORACE CROSBY, OF SOMERVILLE, MASSACHUSETTS.

## PLUG-CHECK FOR MARINE OR OTHER BOILERS.

SPECIFICATION forming part of Letters Patent No. 530,473, dated December 4, 1894.

Application filed February 26, 1894. Serial No. 501,534. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HORACE CROSBY, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Plug-Check for Marine or other Boilers, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a plug check embodying my invention, a part being broken away for greater clearness. Figs. 2 and 3 are end views of the same. Fig. 4 is a vertical central section at line 4—4 of Fig. 2 and Fig. 4<sup>a</sup> is a view on the same line but with the plug turned one hundred and eighty degrees, and Fig. 5 is a vertical central section at line 5—5 of Fig. 2. Fig. 6 is a view showing the connection of my new valve with a boiler-feed and boiler, the boiler-feed and boiler being represented diagrammatically.

Heretofore a check valve and plug-cock have been interposed, universally in marine use and very generally in other use, between the feed-water device,—pump, injector, &c.—and the boiler. These check-valves are short-lived, ordinarily, and liable to frequent disarrangement. To replace or repair them necessitates stopping the feed and closing the plug-cock between the boiler and check valve, and this results in frequent slowing down or stopping of the engine. When, in marine use, the check valves become disarranged, they must be repaired or replaced immediately, and this work is frequently done with great difficulty, especially in rough seas, and is frequently attended with great peril to the ship.

The object of my invention is to produce a device which takes the place of the check-valves referred to and which, if disarranged, is readily repaired without in anywise interrupting the feed.

My invention consists broadly in the combination of a casing or shell having suitable inlet and outlet ports with a plug formed with a plurality of passages, each communicating, when in operative position, with an inlet and outlet port, and each provided with a check-valve of any desired construction, said passages being so arranged that when one check-valve becomes disarranged or dis-

abled, another one of its passages and its check valve may be brought into operative position and the disarranged or disabled check-valve moved out of its operative position, and made accessible, so as to be repaired or replaced without interrupting the boiler feed and without the consequent slowing down or stopping of the engine. A device adapted for this purpose is wholly and broadly new with me; and while my new plug-check is most generally useful in marine service, yet it may be used to advantage in connection with other boilers.

In the drawings, illustrating the best embodiment of my invention now known to me, A is the shell or casing; *a*, the inlet port and *a'* the outlet port whence the feed water flows on its way to the boiler.

B is a plug mounted in shell A in any proper manner, being conveniently secured therein by means of the stem *b* and nut *b'*.

Plug B is formed with a plurality of passages B', in this instance with two such passages at right angles one to the other. Each passage B' is provided with a check-valve B<sup>2</sup> constructed and mounted in any proper manner, so as to permit the flow of feed water from inlet *a* through a passage B' and with the outlet *a'*, when a passage B' is in its operative position, that is, in such relation to the inlet and outlet of the shell or casing as to permit the flow of the feed-water through the device. When one passage B' is in operative position the other passage B' is out of operative position. Check valves B<sup>2</sup> should be so constructed, as will be plain to all skilled in the art, in such wise as to permit the passage of the feed water under pressure and to prevent the back-flow of the water. In this particular construction now illustrated, each passage B' is formed with bushing *b<sup>3</sup>* to which the check valve B<sup>2</sup> is connected and on which the valve seat *b<sup>3</sup>* is formed.

To illustrate the utility and mode of operation of my new device, I will suppose the lower passage and check valve are in service, as shown in Fig. 4, and that the check-valve therein becomes disarranged or disabled. By turning plug B, this lower passage is moved out of operative position and the lower passage with its check valve moved into opera-

tive position and the feed continued without interruption substantially.

It will be plain to all mechanics that my new device may be constructed practically in many different forms, which will enable the disabled check valve to be made accessible for repairs or replacement when it is out of operative position. In this preferred form, however, shell A is formed with openings A' each of which is provided with a cap A<sup>2</sup>. Each opening A' is opposite a passage B and its valve B' when that passage is out of use, and consequently by removing either cap A<sup>2</sup>, either passage B and its valve B' may be reached.

The foregoing will be more readily understood by reference to Fig. 6 in which D represents a boiler and D' a boiler feed. A conduit D<sup>2</sup> connects the boiler and valve-casing A and a conduit D<sup>3</sup> connects the casing with the feed D', the flow being through conduit D<sup>3</sup>, the lower passage in plug B and conduit D<sup>2</sup> from the boiler feed to the boiler. The upper check valve B<sup>2</sup> and the passage to which it belongs are now out of line with the inlet and outlet of the casing and in line with one of the caps A<sup>2</sup> so that the check valve is readily reached when desired. By changing the relative positions of the plug and casing, the lower passage and its check-valve are brought into line with a cap A<sup>2</sup>, the upper passage and check-valve being then in line with the conduits.

By my invention, a check-valve may be repaired or replaced without interruption of the boiler-feed, and I am the first to produce a mechanism whereby this important end may be accomplished.

What I claim is—

1. The combination of a casing formed with an inlet, an outlet and a capped orifice; a plug mounted rotatably in the casing and formed with a plurality of passages; and a

check valve for each of said passages, all so arranged and operating that when one of said passages and its check valve are in line with the inlet and outlet of the casing, another of said passages and its check valve are out of line with said inlet and outlet and in line with a capped orifice, substantially as and for the purpose set forth.

2. The combination of a casing having an inlet and outlet and formed with a plurality of other openings with a plug formed with a plurality of passages; a plurality of check-valves; and a plurality of removable caps for said openings, all so arranged and operating that when one of said passages and its check valve are in line with the inlet and outlet of the casing, another of said passages and its check valve are out of line with said inlet and outlet and in line with a capped orifice, substantially as and for the purpose set forth.

3. As an improvement in safety devices for use with marine and other boilers, the combination of a boiler; a boiler feed; a valve-casing formed with an inlet, an outlet and a capped orifice; conduits connecting the valve-casing, boiler and boiler-feed; a plug formed with a plurality of passages and mounted movably in said casing; and a check valve for each of said passages, all so arranged and operating that when one of said passages and its check valve are in line with the inlet, outlet and conduits, another of said passages and its check valve are out of line therewith and in line with a capped orifice, the cap whereof is removable, whereby a check-valve may be repaired, removed and replaced without interruption of the boiler-feed, substantially as and for the purpose set forth.

JAMES HORACE CROSBY.

Witnesses:

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